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MOBILE APPLICATION DEVELOPMENT FOR DISPLAYING NOTIFICATIONS ABOUT CHANGES ON THE EDUCATIONAL PROGRAM WEBSITE

Abstract: informatization of modern society has led to an increase in information flows. In case with NRU HSE, the main source of information is the website, but there is a risk that the target audience of the site will not be in time to verify the information on it. The aim of this study is to design and then develop a mobile application which will notify students about new information on the University website. The need for this application has been identified through a survey of potential users (students) of the Perm campus of National Research University «Higher School of Economics» (NRU HSE). During the study such methods were used as the methods of analysis of business processes, methods of designing, developing and testing applications. This application is able to prevent a situation where a student does not receive important information. In the future, the app is to be developed further by acquiring new features, expanding the geography of usage.

Key words: IT, informational system, informational system model, business-process, automation.

Websites are one of the major information sources available today. Even though the leading position in the ranking of information sources for the Russians is still held by TV, the proportion of the Internet in this ranking is increasing. Considering current trends, increasing of computer literacy level in the coming years will provide the increase in the proportion of the Internet in the ranking of the main information sources for people. [4]

Business also does not remain on the sidelines in terms of ensuring information flows and information exchange with customers. Most of today's enterprises have websites or/and mobile applications to interact

with customers. The importance of these tools cannot be underestimated. It may be one of the major marketing tools, allowing you to withstand the fierce competitive struggle, allowing you to increase brand awareness and be the company's electronic representation on the Internet. Those enterprises which prefer to avoid the possibility of being represented on the Internet and be available to potential customers, give way to their more advanced competitors and leave the market or begin to implement them.

Speaking about the site of the National Research University «Higher School of Economics» (NRU HSE), we mean a powerful resource that provides interaction with the target audience, which is made up of students, graduates, applicants, and employees of the university. Today it is the main tool of interaction between the university administration and students.

This paper will examine the process of mobile application development. This software can help students to get timely notifications of changes on the website of the National Research University «Higher School of Economics». Currently there is no universal software to solve this problem, so it is necessary to develop its own system, which will allow delivering information posted on the website of NRU HSE timely.

This focus has been chosen because the presence of the mobile application at university will improve its image; it will create a more modern view of it and will simplify communication processes among users greatly.

In order to increase the effectiveness of the task being solved, it is necessary to formulate the problem that must be solved.

A university website is the most important tool of interaction between participants of the educational process, administration and other people associated with the university. However, information does not always come to potential recipients without any additional means of communication, which currently exist, for instance, e-mail. This is due to the fact that students do not often come to the information portal of NRU HSE and do not read the information provided on it.

There is a contradiction. On the one hand, it is necessary for students to view news feed, announcements on the portal at any time. On the other hand, students cannot bring themselves to do it at regular intervals. This is normal and is caused by the human factor, because the timing of these sections is not frequent enough and, accordingly, does not educate in the

user's need to check the news feed constantly. This contradiction must somehow be addressed.

There is a problematic issue how to make a student learn about news, announcements, and other changes to the site timely.

To confirm existence of the problem, a survey was conducted with 135 people to have taken part in (125 were undergraduate students, 7 were graduate students, 3 people were not students). Respondents were asked about a certain piece of news published on the website of NRU HSE-Perm shortly before the survey. The question was to find out if they had seen the news that the order of calculation of scholarships would change the next year. Responses are presented below:

- 89 people (65.9%) have not seen the news at all.
- 15 people (11.1%) have seen the news on the day of publication.
- 18 people (13.3%) have seen the news during the first two days.
- 13 people (9.6%) have seen the news later.

The next question was about how often students visit the university website. The results are shown below:

- 23 people (17%) do it every day.
- 41 people (30.4%) do it every two or three days.
- 24 people (17.8%) do it once a week.
- 19 people (14.1%) do it less than once a week.
- 28 people (20.7%) almost never visit the site.

The survey results have confirmed the existence of the problem. The process of communication between the university administration and students is not effective enough.

Before starting to work, it is necessary to formulate objectives.

The aim of this research is the creation of a mobile application to display notifications about changes on the educational program website. To achieve this goal, it is necessary to perform the following tasks:

1. Analyze a notification model (AS-IS), to understand how it is working now and what should be changed to make it more effective.
2. Examine the information on existing software, which can be adapted to existing requirements.
3. Build a notification model (TO-BE), which will allow to form a vision of a future notification model.
4. Basing on the notification model (TO-BE), formulate the requirements for the developed information system.

5. Make a choice of development environments, methods and approaches to development.
6. Design a mobile application.
7. Develop a mobile application.
8. Conduct tests. Make necessary improvements.

To achieve the objectives, it is necessary to determine the methods which they will be achieved with.

Automation of students notification process about changes on the University website is necessary for effective interaction between students and the university administration. It is assumed that the structure of the application will include a database and a user's application.To achieve the goal the following methods will be used:

- To analyse and format the notification model, the method of functional business processes modeling will be used (in notation IDEF0). [2]
- Relational database will be used to store information locally. The database will store information about users and their subscriptions as well as previously made notifications.
- In the process of designing an application developer creates the terms of reference, according to which the application will be implemented. Preparation of the terms of reference is one of the most important stages of the work.
- The development of the mobile application will be made in Android Studio environment on an object-oriented high-level programming language (Java) using JSoup library that allows to handle HTML-code automatically. [3]
- Application testing will be carried out by automated methods.

As the result of this research we can predict a workable mobile application used by students for timely notification of changes on the website of NRU HSE Perm. This application allows to build almost instant response of students to the published information. The application will allow users to avoid situations when they miss important information in connection with the fact that no one notifies them personally or by e-mail. The app will help to create a lively dialogue between the university administration and students.

In the future, application functionality can be extended with new functions, which may make educational process easier for users, but there

are also limitations which can interfere with the achievement of long-term goals.

The following restrictions were detected on the system design stage:

Firstly, at the level of this work it is impossible to realize a high quality attractive user interface due to the fact that it requires special design skills, knowledge of the basics of usability, as well as the ability in animation programming and blocks interaction. In a short time, it is impossible to learn these skills and perform the task on their own.

Secondly, the device on which the application will be used on, may be of different sizes. This will lead to conflicts (the application can work correctly on one device, but incorrectly on others). The solution to this problem is to adapt applications to the screens of different sizes, which will require additional time.

Thirdly, the development of truly high-quality mobile applications requires more time. During the available time, it is possible to make a decent prototype of the system and, if it is desired to continue its refining further.

Fourthly, hybrid approach is more suitable for the system implementation. However, this approach has functional limitations. All the available hardware and software functionality can be used in native mobile applications. In case of using HTML5 universal markup language there may have restrictions.

However, the last constraint also has its reverse. When we use HTML5 universal markup language, we have the ability to create cross-platform application that will make it easier to optimize for other operating systems (such as Android on iOS).

To conclude, the main goal of the current research was to develop a mobile application whose main task is to notify about the changes on the website of the National Research University «Higher School of Economics». This achievement will allow students to be informed regularly about the latest news and announcements presented on the university website. The application will be implemented in the framework of the Perm branch of the Higher School of Economics. In the future the application will probably start to work with other university campuses and will be improved, gaining new features.

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РАЗРАБОТКА МОБИЛЬНОГО ПРИЛОЖЕНИЯ ДЛЯ ОТПРАВЛЕНИЯ УВЕДОМЛЕНИЙ ОБ ИЗМЕНЕНИЯХ НА САЙТЕ ОБРАЗОВАТЕЛЬНЫХ ПРОГРАММ

Аннотация: данная работа содержит описание процесса проектирования и разработки мобильного приложения для уведомления пользователей об изменениях на страницах образовательных программ. Для достижения цели было проведено описание предметной области, выявлены потребности и предпочтения потенциальных пользователей, разработаны требования к информационной системе, проведен анализ и выбор существующих технологий и продуктов для использования в разработке, произведен выбор среды разработки, запрограммировано и протестировано мобильное приложение.

Ключевые слова: ИТ, информационная система, модель информационной системы, бизнес-процесс, автоматизация.

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